

**South Carolina State Museum
PRE-VISIT MATERIAL
FOR THE MUSEUM TOUR**

**SCIENCE/TECHNOLOGY TOUR
Grades 3-12**

TO THE TEACHER

The pre-visit material contains terms and definitions, a synopsis of the science and technology exhibits at the State Museum.

During the docent-taught tour students will have an overview of the science and technology exhibits. If there are exhibits of particular interest please speak with the docent before the tour begins. They will make every effort to fulfill your requests.

GOALS

To introduce students to a variety of science principles.

To have students examine the role of South Carolina in the development of the LASER, space exploration and the space industry.

To have students recognize how the development of technology has changed the State of South Carolina.

To have students examine the development of technology through museum exhibits.

TERMS AND DEFINITIONS

SCIENCE DEFINITIONS

1. Colonel Charles Bolden – A native of South Carolina who piloted the Space shuttle on Mission 61-C, January 1986 and again in 1990 to place The Hubble Telescope in space.
2. General Charles Duke – A native of South Carolina and a member of the Apollo 16 mission to the moon.
3. Electromagnetic Waves – Energy that travels in the form of waves like light waves and radio waves. The laser harnesses the power of light.
4. Fiber Optics – Used in the communication field, this system transmits light through thin strands of glass or plastic.

5. Gravity – Force of attraction between objects.
6. Infinity – Something that appears to continue forever.
7. LASER – Stands for Light Amplification by the Stimulated Emission of Radiation. It produces light artificially and then makes the light waves form a very intense beam.
8. MASER – Stands for Microwave Amplification by the Stimulated Emission of Radiation, a forerunner of the LASER.
9. Microwave – Smallest form of radio waves.
10. Dr. Ronald E. McNair – Astronaut and a native of South Carolina who tragically died on the Challenger Mission in 1986.
11. Spectrum – A range of material or energy. in the case of light waves, the basic rainbow of colors due to increasing wavelengths.
12. Dr. Charles H. Townes – A native of south Carolina and a 1964 Nobel Prize co-winner for his contributions in the development of the maser and the LASER.
13. Visual Perception – The interpretation of what you see.

TECHNOLOGY DEFINITIONS

14. Boiler – An enclosed vessel in which water is heated to such a temperature that steam is produced.
15. Cylinder – The chamber in which a piston of an engine moves.
16. Cypress – A type of sturdy tree used for the construction of dugout canoes.
17. Dugout Canoe – A boat or canoe made by hollowing out a log.
18. Locomotive – A type of engine that pulls or pushes passenger and freight cars on a railroad track
19. Piston – A cylinder that fits into a larger cylinder and moves rapidly back and forth.
20. Safety Valve – A valve that opens when pressure reaches a dangerous level.
21. Steam Boat – A boat that is powered by a steam engine.

22. Steam Engine – An engine in which the energy of steam is used to drive pistons.
23. Bobbin – A spool for yarn.
24. Dobby Loom – With this machine, fabric can be woven with patterns such as dots, flowers and plaids.
25. Doffer – A mill worker whose job consisted of removing and replacing bobbins on a spinning frame.
26. Filling – The horizontal threads crossing the warp in a woven fabric.
27. Ring Spinning Frame – With this machine cotton is stretched and twisted into yarn.
28. Warp – The threads running lengthwise in the loom and crossed by the fill.
29. Weaving – The warp and fill are interlaced on a loom to make the fabric.
30. Generators – A machine that changes mechanical energy into electrical energy.
31. Hydroelectric – Producing or having to do with the production of electricity by water power.
32. Internal Combustion Engine – An engine which produces energy from heat produced by the explosion of a fuel and air mixture within the cylinder.
33. Barnstormers – Aviators in the 1920s who performed in traveling air Shows.
34. Technology – Development and use of machines to perform tasks.

SCIENCE/TECHNOLOGY EXHIBITS SUMMARY (An * Indicates a major Exhibit)

***VISUAL PERCEPTION HALL**

Learn and also have fun figuring out why you “see” things the way you do through many participatory activities. Everything you see results from light entering your eyes. The structure of your eyes, the nature of light, and your thoughts and experiences all affect how your eyes and brain respond to images. Your interpretation of what you see is called “visual perception”.

***FROM SOUTH CAROLINA TO THE MOON**

For thousands of years people have been interested in learning about “what is out there” in the vast stretches of space. South Carolinians, too, have contributed to our nation’s

many achievements in space. Learn about one of the first telescopes used in the state at Erskine College; see an actual moon rock, and the moon suit worn by Charles Duke and discover more about South Carolina's astronauts.

***LASERS**

The LASER harnesses the power of light and uses it to do work. LASERS are becoming so common that they are part of our everyday lives. Your last telephone conversation was probably carried on a light beam through fiber optics. LASER scanners are familiar sights at stores, but do you know who pioneered the development of the LASER (and won a Nobel Prize for his research) or how a laser actually works? Find out how Dr. Charles Townes, originally from Greenville, became one of the pioneers in LASERS technology; see how a LASER works; discover some of the many ways LASERS are used in your everyday life through hands-on activities.

START YOUR ENGINES

Find out how an internal combustion machine works.

AVIATION

Learn about those "daredevils of the Carolina Skies" and commercial and military aviation.

***TAKE A MESSAGE!**

The exhibit covers the various forms of communication from quill pens, early typewriters, hand-cranked telephones, the telegraph and the printing press.

***ENERGY**

Trace the development of how "power" is produced from the early water wheel to steam power and to the rise of nuclear power.